



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,682	08/21/2003	Yi-Nan Chen	10112801	8288

34283 7590 10/28/2004

QUINTERO LAW OFFICE
1617 BROADWAY, 3RD FLOOR
SANTA MONICA, CA 90404

EXAMINER

TSAL, H JEY

ART UNIT	PAPER NUMBER
----------	--------------

2812

DATE MAILED: 10/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/645,682

Applicant(s)

CHEN ET AL.

Examiner

H.Jey Tsai

Art Unit

2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-14 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Shu 2003/0181016.

Shu discloses a method for filling a uniform mask layer in a trench of a trench capacitor of a DRAM, comprising :

providing a semiconductor substrate 200, wherein a first liner oxide layer 202 and a second liner nitride layer 204 and a mask BSG layer 208 sequentially formed thereon, and the semiconductor substrate has a dense trench area 210 and a less dense trench area 220 with a plurality of trenches formed in both areas respectively; fig. 2B and para. 23+,

conformably forming a doped insulating layer (216, Arsenic doped glass, ASG) covering the second liner layer 204 and the trenches 212, 214,

forming a photoresist layer 230, 240 covering the doped insulating 216 layer and the trenches are filled with the photoresist layer 230, 240,

etching (developing, a chemical removal process) the photoresist layer 230, 240 at an angle (25-90 degree, exposed photoresist formed at an angle after light exposure, developing process only chemically remove the exposed photoresist) until the dense trench area and the less dense trench area in the semiconductor substrate are exposed to leave the photoresist layer in the trenches, fig. 2D-2E, para. 26,

Art Unit: 2812

etching the photoresist layers 230', 240' in the trenches, and a uniform thickness of the photoresist layers in each trench is achieved, fig. 2F,

etching the doped insulating layer using the photoresist layers as etching masks until the exposed doped insulating layer is removed to leave the doped insulating layer in the trenches; fig. 2F,

removing the photoresist layer, and diffusing the doped insulating layers to form a plurality of doped areas the semiconductor substrate, wherein the doped areas are substantially the same size, para. 29 and fig. 2G.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-14 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of copending Application No. 10/283,977 (Pub. No. US 2003/0181016 A1). Although the conflicting claims are not identical, they are not patentably distinct from each other because the

Art Unit: 2812

wording of pad layer, shielding layer and higher number of trench etc. are similar to the liner layer, mask layer and dense trench area, respectively.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Applicant's arguments filed August 6, 2004 have been fully considered but they are not persuasive. Applicant contends that Shu does not teach or suggest a method for filling a uniform mask layer or bottom electrode in a trench comprising the steps of, inter alia, etching a mask/photoresist layer at an angle until the dense trench area and the less dense trench area in the semiconductor substrate-are exposed to leave the mask/photoresist layer in the trenches as recited in claims 1, 4 and 9. This is not found persuasive because Shu clearly teaches in fig.2F, an uniform mask layer of photoresist is formed in the trench of dense trench area and less dense trench area after etching (developing). Since, photoresist-developing process uses a chemical to remove the light exposed photoresist (see any text book for photolithography process), hence, photo-developing process is an etching process. Shu clearly teaches at para. 26-28, photoresist is exposed at an angle, hence the exposed photoresist formed at a slanted angle so that photo developing process removes the slanted exposed area of photoresist with chemicals. Applicant contends that the double patenting rejections of claims 1-14 are insufficient, insofar as they do not comply with the requirements of

Art Unit: 2812

MPEP 707.07 et seq. which requires that all rejections be stated with completeness and clarity. This is not found persuasive because rules of double patenting are set forth in MPEP § 804 not at MPEP 707.07. MPEP § 804 states that if a claimed invention in the application is obvious over a claimed invention in the patent, there would be an unjustified timewise extension of the patent and an obvious-type double patenting rejection is proper. Since, Examiner clearly stated in the last office action that Although the conflicting claims are not identical, they are not patentably distinct from each other because the wording of pad layer, shielding layer and higher number of trench etc. are similar to the liner layer, mask layer and dense trench area, respectively, hence, the double patenting as set forth in the last office action is proper.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Art Unit: 2812

Any inquiry of a general nature or clerical matters or relating to the status of this application or proceeding should be directed to the Group customer service whose telephone number is (703) 308-4357.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to H. Jey Tsai whose telephone number is (571) 272-1684. The examiner can normally be reached on from 7:00 Am to 4:00 Pm., Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (571) 272-1679.

The fax phone number for this Group is (703) 872-9306.

hjt

10/14/04



H. Jey Tsai
Primary Examiner
Patent Examining Group 2800